MaxCyte® FLOW TRANSFECTION

MaxCyte VLX® Large Scale Transfection System

Improve Your Biomanufacturing Using the Ultimate Transfection Platform.

The MaxCyte VLX® Large Scale Transfection System is a small-footprint, cGMP-compliant instrument specifically designed for extremely large volume transient transfection. Proprietary flow electroporation technology provides the ultimate in performance, scalability, and flexibility and enables simple and efficient production of therapeutics within days of transfection. Use the MaxCyte VLX to reduce development times and generate higher yields using smaller process volumes.

MaxCyte VLX for Biomanufacturing: Faster, Better, and Cost-Effective

"...rapid response, higher titers, higher yields, and lower process volumes."

Faster

- plasmid to protein in days to weeks
- rapid response to biological threats
- broad cell type flexibility
- consistency from run to run
- scalability of MaxCyte STX® to MaxCyte VLX®

Better

- high expression levels
- sustained productivity
- improved manufacturability
- higher yield without baculovirus purification loss

Cost-Effective

- reduced process volumes
- lower capital expenditures
- lower operating costs
- single use disposables

Applications

Large-scale production of recombinant proteins, mAbs, vaccines, viral vectors, VRPs, and VLPs

Cell Type Compatibility

Adherent and suspension cell types including CHO, HEK, Vero, NS0, BHK, insect cells, other cell lines, and primary cells

Transfection Capacity

Transfect up to 2E11 cell in <30 minutes

Therapeutic Production

Simplified upstream and downstream operations with smaller process volumes

Programs Enabled by the MaxCyte VLX

Therapeutic Type	Cell	Indication
VRP	Vero	Vaccine
HIV-envelope protein	CHO-S	Clinical trials for HIV vaccine
VEE-replicon particle	Vero	Trivalent filovirus vaccine

Additional Proteins Under Development Using the MaxCyte Platform	
Antibodies	Lentivector
Recombinant proteins	VLP, VRP
AAV	Multi-plasmid constructs

MaxCyte VLX®
Large Scale Transfection System

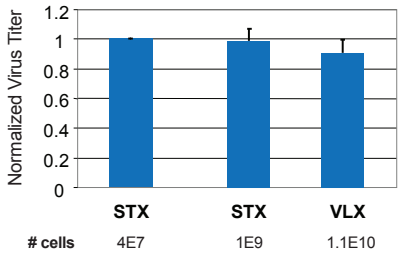
Efficient Transfection for Simplified Upstream & Downstream Processing

Therapeutic Type	Fold Increase MaxCyte vs. Chemical Transfection Titers	Chemical Trnsfxn Culture Vol. Needed to Equate to 50 L VLX Culture
Fc Fusion	45.0	2250 L
Fusion protein	19.5	977 L
Fusion protein	20.3	1017 L
Monoclonal Ab	10.8	540 L
Monoclonal Ab	20.0	1000 L
Monoclonal Ab	50.0	2500 L
Recombinant protein	27.3	1366 L
Recombinant protein (in insect cells)	65.0	3250 L
Vaccine	30.0	1500 L
Viral envelope protein	10.0	500 L
Viral envelope protein	25.2	1261 L

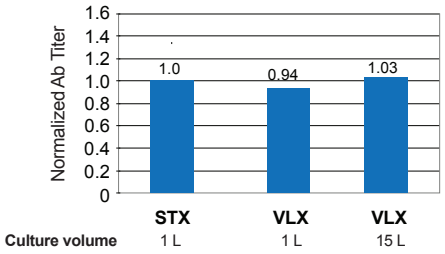
High Expression Levels Following MaxCyte Electroporation Allow for Reduced Culture Volumes. *This series of studies was conducted in 9 different laboratories at various global locations over a two-year period to demonstrate the superior performance of MaxCyte electroporation. Side-by-side transfections were performed using standard, unoptimized MaxCyte electroporation procedures versus the client-optimized chemical transfection methods. Higher expression levels, ranging from 10 - 65 fold increases, for a variety of therapeutic types were observed following MaxCyte electroporation compared with chemical transfection methods. Increased expression levels greatly reduces the culture volumes required for bioproduction. The far right column represents the volume of culture from the chemical transfections that would be required to produce the same amount of protein as that from a 50 L culture following a single MaxCyte VLX transfection.*

One Technology...
From R&D to Bioproduction

A. Lentivirus Production



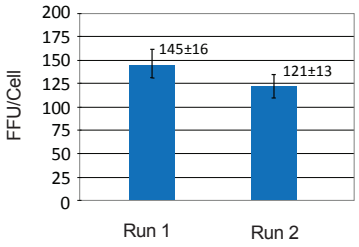
B. Antibody Production



Seamless Scalability using the MaxCyte Platform. ***A.*** *HEK 293FT cells were resuspended in MaxCyte electroporation (EP) buffer at 1E8 cells/mL containing a mixture of plasmids encoding lentiviral vector components (0.4µg of DNA/1E6 cells). Cell were transfected by electroporation using the MaxCyte STX or MaxCyte VLX, depending on the scale of the transfection. Lentiviral titers were measured after 24-48 hrs in culture.* ***B.*** *CHO-S cells were electroporated using either the MaxCyte STX or MaxCyte VLX. Post electroporation cells were resuspended at 4E6 cells/mL using the indicated volumes. Antibody titers were determined 14 days post electroporation.*

MaxCyte VLX Consistency and Reliability

Alphavirus VRP Production



Vero cells grown in a 100 L stir-tank bioreactor were harvested from microcarriers, concentrated by TFF and centrifugation, and washed in PBS before resuspension in MaxCyte EP buffer. 1E11 cells were transfected using the MaxCyte VLX with RNAs encoding genes required for alphavirus replicon particle production. After electroporation, cells were cultured in a 100 L stir-tank reactor for VRP production. Yields reflect functional particles produced per cell (FFU = focus forming unit). Data courtesy of Paragon Bioservices under DoD contract W911QY-12-C-0028.

PARAGON® BIOSERVICES

Contact MaxCyte to *achieve* your bioproduction needs using the transfection method trusted by leading biotherapeutic development companies.

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